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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,035	02/16/2001	John M. Brooks	00CXT0316D	4772

20790 7590 09/30/2003

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EXAMINER

CLEARY, THOMAS J

ART UNIT	PAPER NUMBER
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2181

DATE MAILED: 09/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/785,035

Applicant(s)

BROOKS ET AL.

Examiner

Thomas J. Cleary

Art Unit

2181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "122" and "112" have both been used to designate "Host Interface". See Page 14 Lines 4-13 and Figure 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "444" and "440" have both been used to designate "Downstream PHY". See Page 19 Line 15 and Figure 4. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:  
444. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "112" has been used to designate both "Peripheral Bus" in Figure 1 and "Host Interface" in Figure 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "440" has been used to designate both "Map Queue" in Figure 4 and "Downstream PHY" on Page 19 Line 15. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal et al. ("Neal") in view of Mohammed et al. ("Mohammed") and Johnson et al. ("Johnson").

Neal teaches all the limitations of Claims 1, 3, 5, and 6 except for the plurality of processing functions being partitioned between at least two of the plurality of processors

and a peripheral processing device, communicatively coupled to the peripheral bus, that is operable to perform processing of a selectively off-loaded portion of the cable media, and one of the plurality of processors operable to perform at least one of message processing and scheduling (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal). Mohammed teaches a cable modem device and processor which can be connected to a PCI bus, as in the one taught by Neal (See Figure 1 and Column 5 Lines 22-31 of Mohammed). Johnson teaches a scheduling processor which works to schedule tasks among a plurality of slave processors (See Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). One of ordinary skill in the art at the time the invention was made would combine the device of Neal with the cable modem device and processor of Mohammed and the processor for scheduling tasks among a plurality of processors of Johnson, resulting in the inventions of Claims 1, 3, and 5, in order to upgrade the existing LAN functionality of Neal to allow broadband internet access (See Figure 1 of Neal and Column 1 Lines 15-50 of Mohammed), as well as to provide a means for scheduling portions of processing functions to run on one of the plurality of processors (See Column 1 Lines 20-29 of Johnson).

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of Goldberg.

Neal, Mohammed, and Johnson teach all the limitations of Claim 2 except for the one of the plurality of processors supporting upstream data transfer of cable media and at least one other of the plurality of processors supporting downstream data transfer of

the cable media (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; and Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). Goldberg teaches a media access controller chip for cable modems that has separate upstream and downstream processors (See Page 70 Figure 2 of Goldberg). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the separate upstream and downstream processors of Goldberg, resulting in the invention of Claim 2, in order to allow the upstream and downstream communications to use different frequency bands of the cable broadcast spectrum (See Page 69 Column 3 and Page 70 Column 1 of Goldberg).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of Gaillard et al. ("Gaillard").

Neal, Mohammed, and Johnson teach all the limitations of Claim 4 except for the bridge comprising a direct memory access ("DMA") controller that is operable selectively to provide a portion of the cable media to one of the plurality of processors and to provide the off-loaded portion of the cable media to the peripheral processing device (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; and Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). Gaillard teaches a DMA controller that is included within the bus

bridge and allows each channel complete autonomy in operation (analogous to providing a portion of the cable media to one of the plurality of processors and providing the off-loaded portion of the cable media to the peripheral processing device of Claim 4) (See Column 10 Lines 14-30 of Gaillard). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the DMA bus bridge of Gaillard, resulting in the inventions of Claim 4, in order to improve system efficiency (See Column 9 Lines 66-67 and Column 10 Lines 1-5 of Gaillard).

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of Angle et al. ("Angle").

Neal, Mohammed, and Johnson teach all the limitations of Claim 7 except for the plurality of processing functions comprising media access control functionality (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; and Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). Angle teaches a multiprocessor system in which a plurality of processes are being run, said system optimized for operations involving data packet switching in a media access control layer (See Column 1 Lines 14-29 of Angle). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the multiprocessor media access control layer device of Angle, resulting in the invention of Claim 7, in order to facilitate high data packet

processing rates (See Column 1 Lines 56-67 of Angle) which are associated with high bandwidth devices such as cable modems.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of Odawara et al. ("Odawara").

Neal, Mohammed, and Johnson teach all the limitations of Claim 8 except for one of the plurality of processors employing embedded code to support media access control functionality (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; and Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). Odawara teaches a LAN adapter (analogous to the cable modem of Claim 8) which has several specialized processors, including a media access control layer processor (See Figure 1 and Column 4 Lines 11-22 of Odawara). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the media access control processor of Odawara, resulting in the invention of Claim 8, in order to provide a means for controlling the interface to the network (See Column 4 Lines 11-12 of Odawara).

12. Claims 9, 10, 16, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to Claim 1 above, and further in view of Pemmaraju.

Neal, Mohammed, and Johnson teach all the limitations of Claims 9, 10, 16, 17, and 18 except for a co-processor, communicatively coupled to the second bus, that is



operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors, as in Claim 9, and at least one additional co-processor, that is operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors, as in Claim 10 (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; and Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). Johnson further teaches a device constructed on an integrated circuit (See Column 3 Lines 21-24 of Johnson). Pemmaraju teaches a plurality of peripheral co-processors coupled to a communication line (analogous to the peripheral bus of Claims 9 and 10) that can process the media received through said communication lines (See Figures 1 and 4, Column 1 Lines 54-65, Column 3 Lines 52-58, Column 4 Lines 7-14, and Column 5 Lines 41-55 of Pemmaraju). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, and Johnson with the peripheral co-processors of Pemmaraju, resulting in the inventions of Claims 9, 10, 16, 17, and 18, in order to operate on the data as well as coordinate the networking of the devices connected to the bus (See Column 1 Lines 62-65 and Column 6 Lines 13-18 of Pemmaraju), and to limit the physical space that the device will occupy on a printed circuit board (See Column 2 Lines 32-34 of Johnson).

13. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 9 above, and further in view of Flynn.

Neal, Mohammed, Johnson, and Pemmaraju teach all the limitations of Claims 11 and 15 except for the first bus employing an Advanced System Bus ("ASB") protocol and the second bus employing an Advanced Peripheral Bus ("APB") protocol, as in Claim 11, and the second bus consuming power at a rate lower than the rate at which the first bus consumes power, as in Claim 15 (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson; and Figures 1 and 4, Column 1 Lines 54-65, Column 3 Lines 52-58, Column 4 Lines 7-14, and Column 5 Lines 41-55 of Pemmaraju). Flynn teaches both an ASB protocol and an APB protocol. Since the APB has a low gate count, has typically fewer data bits, and is static except for an I/O access, it uses less power than the ASB (See Page 25 Column 1 of Flynn). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the busses of Flynn, resulting in the inventions of Claims 11 and 15, in order to provide a low power system bus that supports burst-mode signaling, multiple bus masters, and high bandwidth signaling, and a lower power peripheral bus that has a low gate count and is static except when an I/O access occurs, thereby decoupling it from the high bandwidth activity of the system bus (See Page 25 Column 1 of Flynn).

14. Claims 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claims 9 and 17 above, and further in view of Goldberg.

Neal, Mohammed, Johnson, and Pemmaraju teach all the limitations of Claims 12 and 20 except for the one of the plurality of processors supporting upstream data transfer of cable media and at least one other of the plurality of processors supporting downstream data transfer of the cable media (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; and Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson). Goldberg teaches a media access controller chip for cable modems that has separate upstream and downstream processors (See Page 70 Figure 2 of Goldberg). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the separate upstream and downstream processors of Goldberg, resulting in the inventions of Claims 12 and 20 in order to allow the upstream and downstream communications to use different frequency bands of the cable broadcast spectrum (See Page 69 Column 3 and Page 70 Column 1 of Goldberg).

15. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claim 9 above, and further in view of Goldberg.

Neal, Mohammed, Johnson, and Pemmaraju teach all the limitations of Claim 13 except for the co-processor operable to perform at least one of DES encryption and decryption (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and



Column 5 Lines 22-31 of Mohammed; Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson; and Figures 1 and 4, Column 1 Lines 54-65, Column 3 Lines 52-58, Column 4 Lines 7-14, and Column 5 Lines 41-55 of Pemmaraju). Goldberg teaches a media access controller chip that has a hardware implementation of DES encryption and decryption (analogous to the processor of Claim 13) (See Page 70 Figure 2 and Page 80 Column 1 of Goldberg). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the DES encryption processor of Goldberg, resulting in the invention of Claim 13, in order to provide a standardized method for ensuring the security of the data which is extremely difficult to defeat (See Page 74, Page 78 Column 3, and Page 80 Column 1 of Goldberg).

16. Claims 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to Claims 9 and 17 above, and further in view of Angle.

Neal, Mohammed, Johnson and Pemmaraju teach all the limitations of Claims 14 and 19 except for the plurality of processing functions comprising media access control functionality. (See Figures 1 and 2, Column 1 Lines 40-67, Column 2 Lines 1-15, Column 3 Lines 51-67, Column 4 Lines 1-6, and Column 4 Lines 14-23 of Neal; Figure 1 and Column 5 Lines 22-31 of Mohammed; Figure 1, Column 1 Lines 13-29, and Column 2 Lines 45-48 of Johnson; and Figures 1 and 4, Column 1 Lines 54-65, Column 3 Lines 52-58, Column 4 Lines 7-14, and Column 5 Lines 41-55 of Pemmaraju). Angle teaches a multiprocessor system in which a plurality of processes are being run, said system

optimized for operations involving data packet switching in a media access control layer (See Column 1 Lines 14-29 of Angle). One of ordinary skill in the art at the time the invention was made would combine the device of Neal, Mohammed, Johnson, and Pemmaraju with the multiprocessor media access control layer device of Angle, resulting in the inventions of Claims 14 and 19, in order to facilitate high data packet processing rates (See Column 1 Lines 56-67 of Angle) which are associated with high bandwidth devices such as cable modems.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Cleary whose telephone number is 703-305-5824. The examiner can normally be reached on Monday-Thursday (8-5:30), Alt. Fridays (8-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5631.



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tjc